Science Instrument Services

Multimission Image Processing Laboratory

Capabilities Description

Version 28 February 2000

For

Delivery 24.0

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Concurrence:

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Larry Preheim, Date
Science Instrument Services SSM

Change Incorporation Log

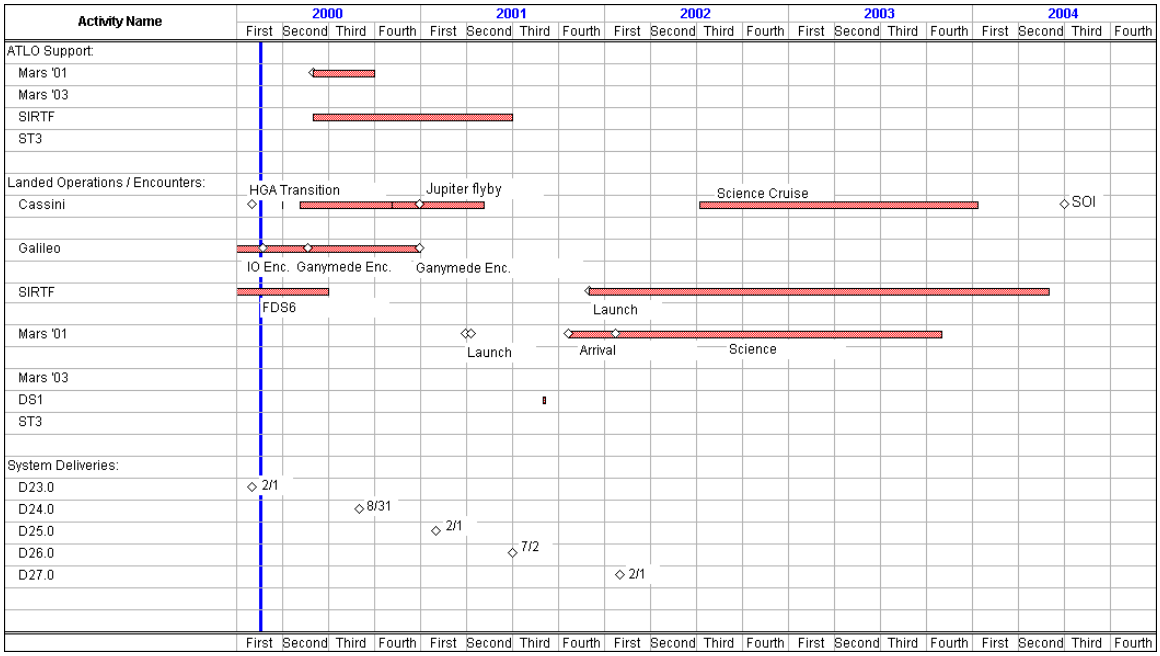
Rev	Issue Date	Pages Affected	Change Summary
Initial	01/31/2000	All	Draft
Final	02/28/2000	All	Updated to incorporate inputs from Integration and Test, System Engineering, and Project and Development CDEs

Table of Contents

Table of Contents
(Continued)

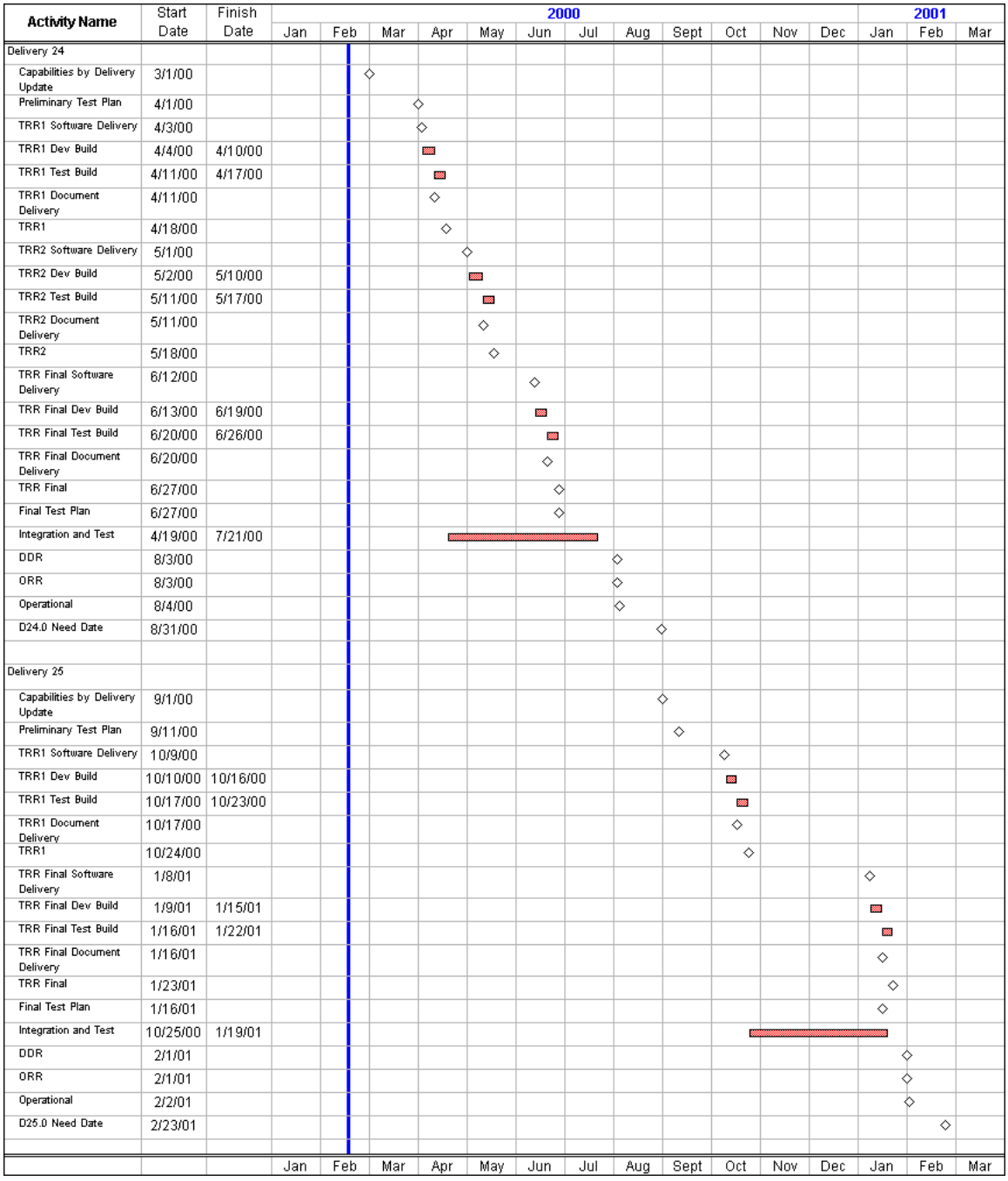
SECTION 1

SIS LONG RANGE SCHEDULE


Activity Name
2000
2001
2002
2003
2004
First Second Third Fourth
ATLO Support:
Mars '01
Mars '03
SIRTF
ST3
Landed Operations / Encounters:
Cassini
Galileo
SIRTF
Mars '01
Mars '03
DS1
ST3
System Deliveries:
D23.0
D24.0
D25.0
D26.0
D27.0
HGA Transition
Jupiter flyby
Science Cruise
SOI
IO Enc.
Ganymede Enc.
Ganymede Enc.
FDS6
Launch
Launch
Arrival
Science
2/1
8/31
2/1
7/2
2/1

SECTION 2

SIS SHORT TERM SCHEDULE


Activity Name
Start Date
Finish Date
2000
2001
Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar
Delivery 24
Capabilities by Delivery Update 3/1/00
Preliminary Test Plan 4/1/00
TRR1 Software Delivery 4/3/00
TRR1 Dev Build 4/4/00 4/10/00
TRR1 Test Build 4/11/00 4/17/00
TRR1 Document Delivery 4/11/00
TRR1 4/18/00
TRR2 Software Delivery 5/1/00
TRR2 Dev Build 5/2/00 5/10/00
TRR2 Test Build 5/11/00 5/17/00
TRR2 Document Delivery 5/11/00
TRR2 5/18/00
TRR Final Software Delivery 6/12/00
TRR Final Dev Build 6/13/00 6/19/00
TRR Final Test Build 6/20/00 6/26/00
TRR Final Document Delivery 6/20/00
TRR Final 6/27/00
Final Test Plan 6/27/00
Integration and Test 4/19/00 7/21/00
DDR 8/3/00
ORR 8/3/00
Operational 8/4/00
D24.0 Need Date 8/31/00
Delivery 25
Capabilities by Delivery Update 9/1/00
Preliminary Test Plan 9/11/00
TRR1 Software Delivery 10/9/00
TRR1 Dev Build 10/10/00 10/16/00
TRR1 Test Build 10/17/00 10/23/00
TRR1 Document Delivery 10/17/00
TRR1 10/24/00
TRR Final Software Delivery 1/8/01
TRR Final Dev Build 1/9/01 1/15/01
TRR Final Test Build 1/16/01 1/22/01
TRR Final Document Delivery 1/16/01
TRR Final 1/23/01
Final Test Plan 1/16/01
Integration and Test 10/25/00 1/19/01
DDR 2/1/01
ORR 2/1/01
Operational 2/2/01
D25.0 Need Date 2/23/01
Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar

SECTION 3

DELIVERY 24.0

3.1 OPERATIONS PERIOD - August 2000 through February 2001

MIPL will be supporting the following mission phases during this operations period:

- Galileo Millenium Mission
- Cassini Jupiter Encounter
- Mars '01 ATLO, Launch and Cruise
- SIRTF Flight Data System Phase (FDS6)
- DS1 Flight Operations

3.2 NEWLY DEVELOPED CAPABILITIES:

3.2.1 General

1. For Delivery 24.0, VICAR will be supported on the following platforms:

    - Linux 6.1 (Red Hat - Intel)
    - Solaris 2.6
    - IRIX 6.5.5
    - DEC Unix 4.0F (FEI clients only)
    - Open VMS (selected Galileo processing only)

2. The runtime library will be updated:
    a. Efficiency enhancements to VICAR RTL label processing
    b. Fix to the Fortran string passing on the SGI.

3. NAIF toolkit upgrade to version 50.0

4. Implement spice client for Linux

3.2.2 MIPL Data Management System (MDMS)

1. Implement "file types list" capability in fei3. (Build1)
2. Replace "since date" option with "on<date_time>", "after<date_time>, before<date_time>, and between<date_time1> and <date_time2> (Build2)

3.2.3 JADE

1. Continue Prototype Java Replacement for xvd; deliver image display.
2. Java VICAR file I/O capability (RTL equivalent), and integration of this as a JAI data source/sink (codec). (Build1)
3. Continue work on Prototype Java stereo image viewer. (Build3)
4. MICA (Mosaic Interactive Correction Assistant) will be delivered. (SGT development) (Build1)

3.2.4 Systematic Processing

1. Efficiency enhancements to the Mars mosaic programs. (Build1)

Delivery includes the following programs: marsmap, marsmos, marsmcauley

3.2.5 Science Processing

1. Capability that allows the user to create C-like expressions to perform general mathematical operations on one or more IBIS/graphics file columns. (MF3) (Build1)
2. Modified ibis2ctl to:
   a. increased buffer size to accommodate large IBIS files and corrected the PDF documentation (Build1)
   b. Corrected for double precision data to support SRTM. (Build1)

3.2.6 New Development System - Real-Time Telemetry Support

The CORBA real-time infrastructure will be delivered. The initial delivery is intended to support the CASSINI project. The initial delivery will include:

1. Analyst interface client (Build2)
2. Analyst interface web server (Build3)
3. JEDI instrument display client and server (Build3)
4. MIPS interface to FEI, catalog, and WMS (Build3)
5. Instrument constructor (Build2)
6. TDS interface (Build2)
7. Security server (Build3)
8. Control (Build3)
9. Message Dispatcher (Build3)
10. Log Archive (Build3)
11. Persistent store (Build3)

3.2.7 VESA Libraries and Programs

1. The VESA libraries will be delivered for SGI.
2. The IVIEW and SVIEW programs will be delivered as standalone software.
3. The bumpysphere program will be delivered under the VICAR tree.

3.2.8 System Build

CORBA build scripts for Real-time will be delivered. (Build1)

3.2.9 Cassini

This delivery will support Jupiter encounter. It is expected that the baseline uplink software and the real-time telemetry processing software capability will be for D24.0. The two existing Cassini FEI servers (running under two different Kerberos versions) will be consolidated and FEI clients updated. It is also possible that MIPL may begin development of a capability to support real-time telemetry processing of Level-1A products for all Cassini instruments (7 additional instruments).

1. Standalone Real-time telemetry processing. Real-time telemetry support for the ISS and VIMS instruments and ancillary engineering data will delivered as standalone applications without real-time CORBA integration in Build1. The ISS application will support lossless decompression only. The instrument constructors will be integrated with the real-time CORBA infrastructure for Build3.

2. Uplink command capability.
   a. The uplink command capability will include:
      1. the ability to generate IEB load files,
      2. generation of the corresponding instrument command predicts for input to the E-Kernel.
      3. A standalone constraint checker for the primary interface file between the Team Leads and the Instrument Operations team will be delivered. The constraint checker will have the capability to interact with the uplink catalog.

3. MDMS Cassini upgrade.
   a. A new Cassini catalog for support of uplink will be developed.
   b. The existing ISS and VIMS catalogs will be updated.

4. Cassini-specific software.
   a. Uplink catalogs for VIMS and ISS will be defined. (Build1)
   b. Cassini-specific stored procedures will be written to populate the uplink catalogs with predict information. (Build1)
   c. A new program 'isslab' will be delivered to correct ISS labels from the ISS catalog contents. (Build1)
   d. A new version of the program 'cas_binlist' will be delivered. (Build1)

   Delivery includes the following programs: isslab, cas_binlist (Build1)

3.2.10 Galileo

Galileo operations will transition to use of FEI3. AR fixes listed in Section 3.3 will be delivered.

3.2.11 Mars '01

Capabilities to support Mars '01 include:

1. Capability to support processing the updated command and telemetry dictionary for all cameras.
2. Capability to catalog EDRs.
3. Science programs to generate toe-in or warped images and correct navigations of a set of overlapping images using tiepoints.
4. Preliminary RAC and PanCam mosaic capability. (Build3)
5. The ability to produce stereo pairs, range maps, disparity maps and terrain models from the RAC and PanCam . (Build3)
6. Capability to mosaic Marie Curie cameras. (Build3)
7. EDR commands (predict) support where E-kernel information is ingested into our catalog and placed in the EDR label.
8. FEI support (MIPL side).

9. Rover locator software.
10. icer compression module (Build1)

Delivery includes the following programs:
Build1- m01telemproc, marsnav, PIG library, marscorr, marsxyz, marstie, icer compression module
Build2 -mpfcahv, catalog support, m01point, terrain model generator, JEDI generator, Rover Locator CIP.

3.2.12 SIRTF

SIRTF will be in FDS6. The instrument constructor will be delivered as a standalone capability to support the FDS6 phase. Capabilities to support SIRTF include:

1. Create nominal DCE's for all instruments (MIPS, IRS, IRAC). (Build2, Build3)
2. Create expedited DCE's for all instruments. (Build2, Build3)
3. Create HK&E ECSV File. (Build2, Build3)
4. Create complete FITS header. (Build2, Build3)
5. Detect missing packets. (Build2, Build3)
6. Merge retransmitted packets. (Build2, Build3)
7. Handle out-of-order packets. (Build2, Build3)
8. Decompress science packets. (Build2, Build3)
9. Processing Report - nominal data. (Build2, Build3)
10. Processing Report - expedited data. (Build2, Build3)
11. Update file metadata in catalog.(Build2, Build3)
12. Utilize fei to deliver products. (Build2, Build3)

3.2.13 DS1

DS1 is expected to continue with "lights-dim" operation of the telemetry processor.

3.3 ANOMALY FIXES

The following anomalies are planned to be delivered for D24.0:

Build No.	AR No.	Criticality	Component	Subsystem	Description
24.0.1	9039	3	map3	P2	the following problems are all related to the new print formater:
24.0.1	9040	3	map3	P2	map3 is supposed to update the following galileo label items in the vicar label: sunaz, smraz, scaz, noraz, smraz, lat, lon, vscl, hscl
24.0.1	9044	2	maplabprog	P2	several problems were found during the testing of maplabprog. please see attached memo for detail
24.0.1	9059	2	nav	P2	in limbfit, only part of the zoomed image is displayed in window when czoom is set bigger than 1. in limpfit, command 'H couldn't restore the original image back after zoom (for word-format images only)/
24.0.1	9084	2	xvd		on all platforms the zooming in magnification windows sooner or later crashes xvd.
24.0.1	9524	3	pwssnip	P2	The data type of the parameter EKID should be consistent with that in the catalog: 4 char.
24.0.1	9562	2	pwssnip	P2	The column TLM in the output listing of PWSSNIP is not consistent with what gets updated in the field telemfmtid of the table pwspredict for some records.
24.0.1	9871	2	ibis.com	P2	IBIS generated an abnormal process termination during unit testing with the following case:
24.0.1	100315	3	fei3	MDMS	FEI3 does not work correctly during daylight savings time. It allows users to Add or Get files an hour before the user-specified time. For example: on October 25, 1998 <daylight savings time> -- before 2 am. babe@/export/home/txh% Add image2 since 1998-298T00:00:00 Formatted 'since': 1998-298T00:00:00 ... -- at 2 am. <an hour has been subtracted> babe@/export/home/txh% Add image2 since 1998-298T02:00:00 Formatted 'since': 1998-298T01:00:00 ...
24.0.1	100458	3	fei2	MDMS	When the Kerberos server machine is busy (may be caused by a busy database server), new client may not able to obtain a service ticket due to client connection timed out. A log file of the problem is located in /project/it/ar_attachments, under the

					name of [AR number].log. Scenario: 1. Restart a new FEI2 server 2. Keep the Sybase server busy with "select * from sysobjects a, ..." 3. Start to subscribe with a new ticket.
24.0.1	100484	2	gll_rts_ssi.com		When 'ENCODINGTYPE' is 'NONE' in the VICAR label, it is 'HUF' in the ssiraw table. Additionally, ICT compression ratios are not 0.0 while HUFFMAN compression ratios are 0.0. This anomaly occurred during verification of the AR100255 for SCLK 440873578
24.0.1	100499	3	dbView	MDMS	When set feedback is 'on', the dots are not displayed on the screen as expected.
24.0.1	100507	2	glltelemproc.com		glltelemproc calculates the incorrect sclk in the line prefixes for the whole image when a COW (cut out window) is present otherwise the sclk is calculated correctly. Noticed so far in HIS images. The programmer will need to check other telemetry formats.
24.0.1	100920	3	fei	MDMS	In the event the FEI V3 server is not able to start - e.g. the sybase SQL server is not available - the FEI server displays a message to the system console but does not log the message in the feiserver log file. Thus if you are not lucky enough to see the error fly by on the console at boot, you have no idea why the fei server didn't start or if it even tried to start at all. Simple solution, just be sure all messages that go to the console are also in the log.
24.0.1	101026	4	ds1_tlmproc		When the parameter LOG_FILE = blank or not specified at all, ds1telemproc does not automatically generate a log file in the current working directory.
24.0.1	101247	4	xvd		When running xvd using command line option fullscreen, then removing full screen with menu and redoing fullscreen does not display image in full screen.
24.0.1	103139	3	feiAccept	MDMS	On all platforms, a core dump occurs when a binary file is piped into the FEI command Accept.
24.0.1	103140	3	feiAccept	MDMS	When a directory name is specified from STDIN, the Accept command terminates with a core dump. Also, when the

					filename is too long, a core dump occurs.
24.0.1	103203	3	xvd		XVD failed to save to a path which uses ~/ to alias a users home directory.
24.0.1	103309	3	minmax	P2	minmax test program finds right min and max but prints wrong min and max for real*8 data.
24.0.1	103330	3	ibis-copy	P2	The following command halts with error code 11: ibis-copy temp temp1 nc=6 incol=(1,5,6) nr=6 outc=(2,4,5) However, it executes on ssv-render.
24.0.1	103361	3	sage		In the Sage Server :: Tools :: Toolbox :: Edit :: Change Icon dialog box, filling in the field and clicking "cancel" saves what was typed. This should not be the behavior of a cancel button.
24.0.1	103398	4	sage_html_tutorial		In exercise 1.4 of the tutorial, there is a reference to /usr/local/images/*. This no longer exists. The new image repository is /usr/local/vicar/images/*. Also, in 1.5 the reference to parameter INP(2) should be changed to Temp File.
24.0.1	103406	3	dbView	MDMS	When the '(type)' option is used with the command 'show db', dbView core dumps. See example below: 1> show db (triggers) triggers : filesInsUpd Segmentation fault (core dumped) [tlt@ssv-render]$ This only occurs on linux.
24.0.1	103450	2	dbView	MDMS	The show db (object type) command results in an error, no objects listed. ex: show db (stored procedures)
24.0.1	103506	3	sage		Comments inserted in the vpl window cannot be

					removed. Also, it's tricky to make a comment box inactive after writing the comment; clicking outside the box will not work.
24.0.1	103766	3	file_name.com		Only on linux in the file_name module, the subroutine unix_basename is parsing incorrect values. On all platforms, file_name should not allow unix directory specifications that contain periods.
24.0.3	103771	3	feifilemaker	MDMS	The advertised 'crc' option in the FEI command feifilemaker functions like 'encrypt' and not like 'crc'.
24.0.1	103790	3	lbl_routines.com		When "lbl_routines.com" is ran on the Alpha, an error is raised.
24.0.1	103797	3	feiProcs.sql	MDMS	The following error message occurs when stored procedure deleteFileType is executed: 1> deleteFileType casIss 2> go WARNING DBS MDMS cascade::dbView Mon Oct 11 16:28:43 1999 (Db: fei_d, Proc: deleteFileType, Line: 14) Arithmetic overflow during implicit conversion of NUMERIC value '10000055' to a NUMERIC field . Arithmetic overflow occurred.
24.0.1	103823	3	sage		Opening the AESOP toolbox and selecting jpeg_dct results in: Couldn't find module 'jpeg_dct', status=5!!!!
24.0.1	103858	3	dbView	MDMS	When the command 'info' is typed at the dbView prompt on solaris, the following is displayed: 1> info dbView, version 1.3, July 9, 1998 Copyright 1993-1998, The Jet Propulsion Laboratory. All rights reserved. Sybase DB-Library/11.1.1/ P-EBF7662/sun_svr4/SPARC Solaris 2.5.1/1/OPT/Thu Nov 20 15:57:51 1997 While on other platforms, the following is displayed:

					1> info dbView, version 1.3, July 9, 1998 Copyright 1993-1998, The Jet Propulsion Laboratory. All rights reserved. Sybase version 4.6.2 Copyright 1987, 1993 all rights reserved. Use, duplication, or disclosure by the United States Government is subject to restrictions as set forth in FAR subparagraphs 52.227-19 (a)-(d) for civilian agency contracts and DFARS 252.227-7013 (c) (1) (ii) for Department of Defense contracts. Sybase reserves all unpublished rights under the copyright laws of the United States. Sybase, Inc. 6475 Christie Avenue, Emeryville, CA 94608 USA.
24.0.3	104001	3	Feinotify & feisubscribe help	MDMS	The syntax display for feisubscribe and feinotify is missing the forward slash(/) after the first pathname, specifically: feisubscribe <file type> [<pathname>] {[restart] [using <[pathname/]options file name>]} should look like: feisubscribe <file type> [<pathname/>] {[restart] [using <[pathname/]options file name>]} When the pathname is specified without the '/', fei displays the message: Invalid argument
24.0.1	104022	3	Feinotify & feisubscribe	MDMS	When a control C is executed to terminate an feinotify or feisubscribe process on the linux platform, the following lines are not displayed: FEI Information on 1999-175T13:33:44 Shutdown complete. Normal termination.
24.0.3	104026	3	FeiServer_3	MDMS	This error message occurs after a file of a size larger than the specified feiServer_3 '-c' value has been received by a subscription. Any subsequent files are not received.

24.0.3	104052	2	fei client	MDMS	the FEI fileType is not included in the subscription log file when a new filename is logged. When we direct all our subscriptions to a single log file, we are unable to distinguish which files were received from which fileType
24.0.1	104055	3	rts_util_routines		Incorrect Julian UTC & Tomorrow UTC are displayed when testing "rts_util_routines.com". test cases are: 1) 2100-12-31T00:00:00.000 - incorrect tomorrow UTC 2) 2101-01-01T00:00:00.000 - incorrect Julian UTC 3) 2101-01-02T00:00:00.000 - incorrect Julian UTC
24.0.3	104080	3	feisubscribe	MDMS	On the linux platform only, feisubscribe spawns too many processes.
24.0.1	104142	2	fei server	MDMS	GLL FEI server crashed 12/24/99. T. Huang reported after debugging the core dump that the server had crashed because an excess of 550 connections were attempted. The server must not crash when it's limit is reached - it should refuse the offending connection(s), report useful information back to the user who was refused and report to the server log that the max limit was exceeded, then continue to function normally - not crash (abnormal termination) and destroy all valid user connections.
24.0.1	104146	2	fei server	MDMS	FEI V3 Server log Error message do not provide enough information to determine the cause of the problem or even what the problem is. Does not provide information on the client IP address or host name, fileType and/or file having the problem, or the activity which failed (one of the messages does include the principle and if the message is correct the activity of "subscribing" has experienced the problem - which is very useful). It does not describe what the problem is except to state a "GENERAL FAILURE" - no way to know how to recover or solve this or even know what the impact is (it could be an insignificant warning and not a real error - but can't tell). Did the client disk fill? Do they lack

					proper privs? Did their connection get cut off? Does the user need help or is the server in trouble? 13:57:56 Mon 01/10/00: <pjw> Error during subscription processing. GENERAL FAILURE. 13:57:57 Mon 01/10/00: ERROR during poll of client connection. I/O error
24.0.1	104158	3	geomv	P2	Calls to geomv in the test pdf during a batch mode as well as during an interactive mode do not generate any results (output files) on Linux only.
24.0.1	104160	4	aggrg help	P2	The help pdf for the program aggrg needs to be updated to specify the maximum column length. The related package is aggrg_bb.
24.0.1	104175	3	dbView	MDMS	On all supported platforms, dbView core dumps when the command 'show db (types)' is executed after the 'set page #' command. See example below: 1> set page 1 1> show db addFileType Stored Procedure : addFileType Owner : dbo Parameter Datatype Description ---------- ---------- ---------- ---------- @name varchar(30) NULL Segmentation fault (core dumped) cascade{tlt}%
24.0.1	104325		spbri.com, nimsobs.com		Tried to load NIMS OBSTAB I25NIMS_PB_000214.TAB in SELECT O, but stack dumped. It will load in SELECT P. A

					change needs to be made to the zet2utc calling sequence in spbri.com, which requires a change in the way this routine is called by nimsobs. However, spbri still contains another bug which must be fixed before nimsobs can call zet2utc. Therefore, both spbri.com and nimsobs,com must be redelivered.

3.4 HARDWARE UPGRADES

For Cassini, a slave TDS, casmips1, will be set up in MIPL behind the TMOD firewall. Working Mission Storage (WMS) for Cassini will need to be reallocated to support the Jupiter encounter.

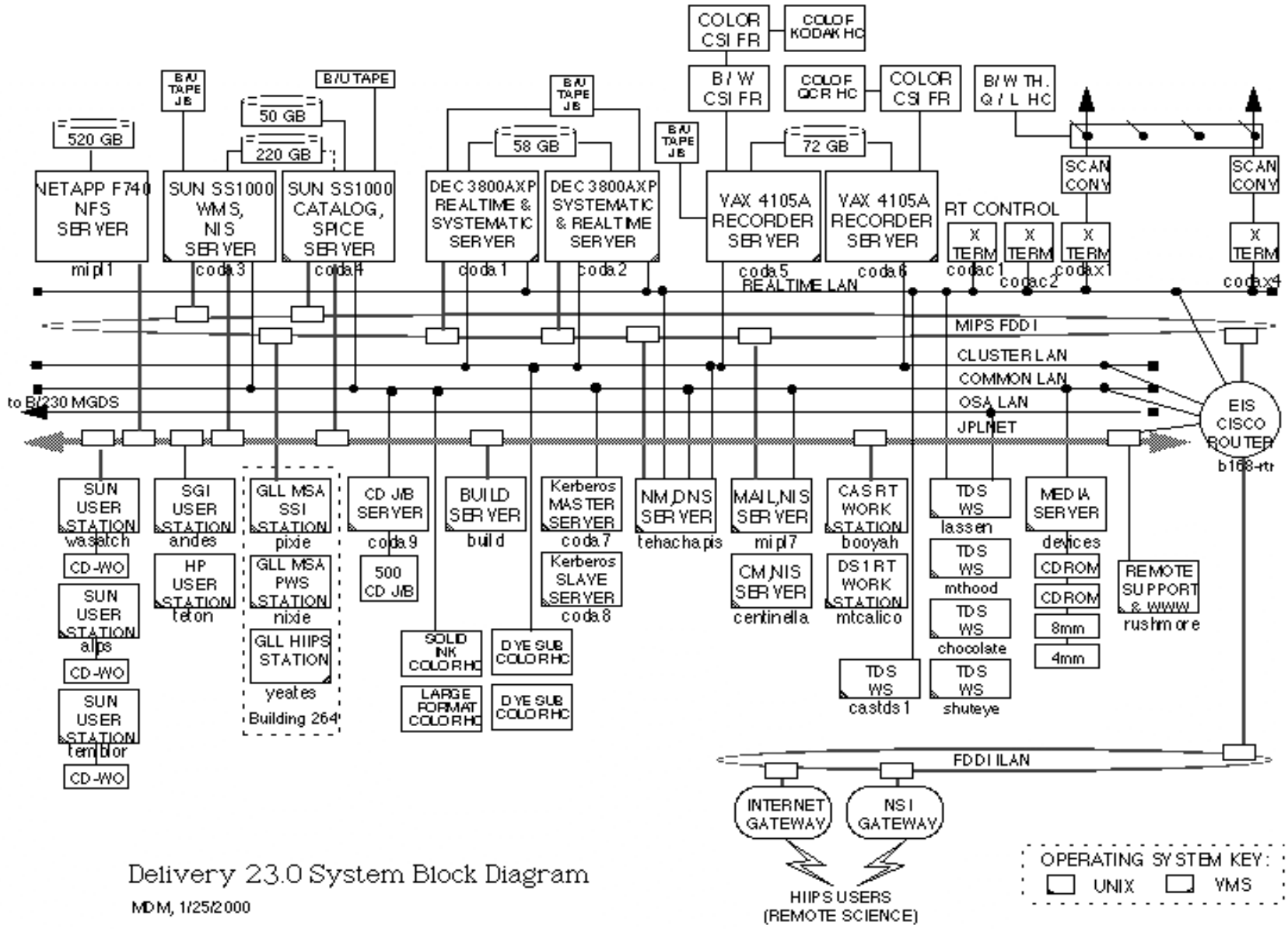
coda3 and coda4, the current servers for Sybase, fei, and SPICE, will be replaced with 2 - Sun Enterprise 450's. coda3 will continue to be the NIS server. Working Mission Storage (WMS) will be moved from coda3 to mipl1, the Netapp 740 NFS server.

mipl7, the mail server, will be upgraded to Solaris 2.6 OS.

A MIPL Testbed will begin to be configured and installed during the D24 timeframe. It will include the following hardware:

2 - Ultra 60s, 2 - Ultra 5s, 2 - Linux PCs, coda10 netapp, 1 - sparc 20

Diagram 3-1 defines the hardware environment in place at the start of development for D24.0.



Delivery 23.0 System Block Diagram

MDM, 1/25/2000

3.5 TEST APPROACH

The test approach for D24.0 is detailed in the Preliminary I&T Test Plan, which will be available on April 1, 2000. The general approach is summarized here:

- For revised/new capabilities on existing applications, I&T will validate the delivered capabilities and execute delivered unit tests. If time permits, regression tests will be run.
- For revised/new libraries, I&T will verify the build results with CM and run unit tests of randomly selected programs which use the affected libraries.
- For AR fixes, I&T will validate the anomaly corrections and execute delivered unit tests. If time permits, regression tests will be run.
- For new applications, I&T will run delivered unit tests and verify results. Verify help documentation. If time permits, extended test scripts will be run.
- End-to-end system tests will be performed on Cassini Uplink software and Mars Science programs.
- For delivered documents, I&T will validate contents only.

All tests listed above will be performed on specified supported platforms only. All results will be analyzed as thoroughly as can be possible in the permitted time.

In addition to all capabilities NOT included in this document, I&T WILL NOT test the following:

- SAGE, MICA and JADE on the alpha/vms platform.
- Operating System upgrades not completed by Build1.
- External libraries.
- Third party software.
- Any undelivered scripts or software including scripts used for operations.
- Unported software on LINUX.
- Spelling, grammar and style in documents.
- Remote database server capabilities.
- Unscheduled ARs of Criticality 3 or below unless delivered along with Criticality 1 or 2 ARs.
- Software deliveries missing unit tests and test logs for all supported platforms.

Any referenced hardware or software modifications refer to only those made on designated CM Build machines.

3.6 SOFTWARE DEVELOPMENT AND OPERATIONS ENVIRONMENT

OPERATING SYSTEMS (v2k patches applied where applicable)

Platform	Vendor	Product	Version	Description	Used on:
Sun	Sun	SunOS	4.1.4	Operating system	tehachapis
Sun	Sun	Solaris	2.6	Operating system	coda3,coda4,mipl7, coda7, coda8, charlotte, ssv-sol, maxwell, rushmore, pixie, all autoclient workstations
Sun	Sun	Solaris	2.5.1	Operating system	centinela
Sun	Sun	Solaris	2.4	Operating system	coda9
SGI	SGI	Irix	6.5.5	Operating system	andes
Compaq/ DEC	Compaq	Tru64 Unix	4.0F	Operating system	kitt
Intel	Red Hat	Linux	6.1	Operating system	klamath

Alpha/AXP

Platform	Vendor	Product	Version	Description	Used on:
AXP	Compaq/Dec	OpenVMS	6.2 w/ y2k patches	Operating System	coda1, coda2
AXP	Compaq/Dec	C	4.0	C compiler	coda1, coda2
AXP	Compaq/Dec	C++	1.3A	C++ compiler	coda1, coda2
AXP	Compaq/Dec	BKR	4.2	Compaq/Dec book reader	coda1,coda2
AXP	Compaq/Dec	FORTRAN	6.2	FORTRAN compiler	coda1, coda2
AXP	Compaq/Dec	Compaq/Decwindows	1.2-4980120	X11+Motif for VMS	coda1, coda2
AXP	Process Software	MultiNet	4.1A	TCP/IP for VMS	coda1, coda2
AXP	Ergonmic Solutions	Rampage	1.1	Paging software	coda1
AXP	Century Computing + GSFC	TAE	5.2	Transportable Application Environment	coda1,coda2
AXP	JPL	Math77	5.0	JPL Math library	coda1,coda2
AXP	University of Tenn, ORNL	pvm	3.37	parallel virtual machine system	coda1,coda2
AXP	Sybase	Sybase client	10.0.4	Sybase client for FEI	coda1,coda2

VAX

Platform	Vendor	Product	Version	Description	Used On:
VAX	Compaq/Dec	OpenVMS	6.2 w/ y2k patches	Operating System	coda5,coda6
VAX	Compaq/Dec	C	5.7	C compiler	coda5,coda6
VAX	Compaq/Dec	C++	5.6-013	C++ compiler	coda5,coda6
VAX	Compaq/Dec	Fortran	6.5	Fortran compiler	coda5,coda6
VAX	Compaq/Dec	BKR	4.2	Compaq/Dec book reader	coda5,coda6
VAX	Process Software	MultiNet	4.1A	TCP/IP for VMS	coda5,coda6
VAX	vendor + inhouse			Film recorder drivers	coda5,coda6

SUN

Platform	Vendor	Product	Version	Description	Used on:
NCD	NCD	NCDware	4.0.118	X-windows terminal software	MIPLx1… MIPLx6
Sun	Interactive Development Environment, Inc	IDE CLC++ CLCC CODECENTER OBJECTCENTER	n/a	Development tool	mipl7 - LICENSE SERVER arsia - Software
Sun	KL Group	XRT graph-motif	2.4.0	XRT graph-motif	mipl7
Sun	KL Group	XRT 3d-motif	2.1.0	XRT 3d-motif	mipl7
Sun	KL Group	XRT table-motif	2.0.0	XRT table-motif	mipl7
Sun	KL Group	XRT graph-motif	2.4.0	XRT graph-motif	coda3
Sun	KL Group	XRT 3d-motif	2.1.0	XRT 3d-motif	coda3
Sun	KL Group	XRT table-motif	2.0.0	XRT table-motif	coda3
Sun	MIT	X11R5	R5	Windowing system	tehachapis, (Sun OS 4 systems)
Sun	Sun	Openwindows	3.6	Windowing system	Solr 2.6 systems
Sun	Sun	CDE	1.2	Desktop environment	Solaris systems
Sun	Pure Software (3 licenses)	Purify	4.1	Development tool	coda3
Sun	Sterling Software	Alexandria	4.5 PL 52	Backup utility	coda3
Sun	Veritas	Volume Mgr	2.51	On-line storage management software	coda3, coda4
Sun	Veritas	File System	3.21	File System	coda3, coda4
Sun	Cisco	SBUS Adapter Driver	2.1, 3.1, 3,2 4.1	FDDI Card driver	mtcolor, mipl7 coda3, coda4
Sun	NCSA	httpd		WWW document server	Tehachapis

Platform	Vendor	Product	Version	Description	Used on:
Sun	Mercury Interactive	xrunner	4.0.1, 6.0	X based regression test tool	mipl7 (can run on other non-VITEC Suns)
Sun	Sybase	Sybase Open Client	11.1.1	Sybase Client	all
Sun	Sybase	Sybase server	11.9.2	Sybase server	Coda4
Sun	Century Computing + GSFC	TAE	5.2	Transportable Application Environment	all
Sun	Boston Business Systems	edt+	7.17	EDT text editor for UNIX	all
Sun	Research Systems Inc. 1 user	IDL	4.5.2	Data Processing Tool	all
Sun	GNU project	perl	5.005.02 5.001	scripting language	all
Sun	Research Systems, Inc 1 user	ENVI	2.0	Data processing tool	all
Sun	Curtin University	netman	1.1	network monitoring tool	tehachapis
Sun	Curtin University	interman	1.1	network monitoring tool	tehachapis
Sun	Curtin University	etherman	1.1a	network monitoring tool	tehachapis
Sun	Curtin University	packetman	1.1	network monitoring tool	tehachapis
Sun	Northeastern University	req	2.7	request management system	mipl7
Sun	Northeastern University	tkreq		request management system	mipl7
Sun	Northeastern University	td		request management system	mipl7
Sun	Northeastern University	tk	3.6	request management system	mipl7
Sun	UC Berkeley	tcl	7.3	needed for CDE scripting	
Sun	Northwestern Univ	top	3.4 (SunOS) 3.5beta8 - (Solaris)	cpu monitor tool	all
Sun	USC	sysinfo	2.1.2 (SunOS) 3.4 (Solaris)	system hw info display tool	all

Platform	Vendor	Product	Version	Description	Used on:
Sun	Colorado State	sudo	1.31pl4 (Solaris) 1.53 (SunOS)	Superuser environment wrapper	all
Sun	Cornell University	tcsh	6.06	Default shell	all
Sun	GNU project	emacs	19.31, 19.34	extensible window editor	all
Sun	NCSA	Xmosaic	2.6, 2.7Beta4	hypertext browser	all
Sun	RogueWave	tool.h++	7.0.1	C++ development library	all
Sun	MIT	kerberos	4, 5	secure client server data transfer	all
Sun	University of Delaware		3.1 (SunOS) 3.3c (Solaris)	Network Time Protocol (ntp) daemon	all
Sun	Cornell University	gated	3.5.8	Network routing daemon	coda3,coda4, Hosts with 2 network interfaces
Sun	JPL	Math77	5.0	JPL Math library	all
Sun	University of Tenn, ORNL	pvm	3.37	parallel virtual machine system	all
Sun	Sun	C	3.0.1	Compiler	all
Sun	Sun	C++	4.0.1	Compiler	all
Sun		Fortran 77	3.01	Compiler	all
Sun		pine	3.95	mail tool	all
Sun		elm	2.4 pl 24 pgp2	mail tool	all
Sun		exmh	1.5.3	mail tool	all
Sun	Orbix	CORBA	2.2 MT		spacemouse
Sun	Netscape	Netscape	4.6 & lower	web browser	all
Sun		Java Dev Kit	1.02, 1.1.4, 1.2	development kit	all
Sun	Platinum	CCC/Harvest	3.01	CM tool	centinela server, client all
Sun	public domain	xpm	3.4F	X pixmap library	Used with sage
Sun	USGS	ISIS	970214	Image processing system	Solaris systems

Platform	Vendor	Product	Version	Description	Used on:
Sun		mvp	3.0 (/usr/local/vicar/external)	Multimission VICAR Planner, AI planner	
Sun		spice	Current MIPS delivery version	NAIF toolkit for GLL	
Sun		pds_label_lib	4.0	planetary data system label library for read/write/process PDS labels	
Sun		pds_lablib3	1.0	PDS Label Library Light	
Sun		aesop	2.5	Extensible Motif-based on board-algorithm evaluation system	
Sun		DD++	1.2	C++ wrapper for the Motif 1.2 drag and drop preregister protocol.	
Sun		MotifApp	1.9 & below	Doug Young's C++/Motif user interface class, modified by MIPS.	
Sun	Washington Univ., S,t. Louis, MO	ACE	5.0.14	Adaptive Communication Env.	
Sun	Washington Univ. St. Louis, MO	TAO	1.0.14	The Ace Orb	

SGI

Platform	Vendor	Product	Version	Description	Used On:
SGI	SGI	Irix	6.5.5	Operating system	andes
SGI	Century Computing + GSFC	TAE	5.2	Transportable Application Environment	andes
SGI	Research Systems Inc. 1 user	IDL	4.0.1	Data Processing Tool	andes
SGI	GNU project	perl	5.004.04	scripting language	andes
SGI	Research Systems, Inc 1 user	ENVI	2.0	Data processing tool	andes
SGI	Cornell University	tcsh	6.06	Default shell	andes

Platform	Vendor	Product	Version	Description	Used On:
SGI	GNU project	emacs	19.31, 19.34	extensible window editor	andes
SGI	NCSA	Xmosaic	2.6, 2.7Beta4	hypertext browser	andes
SGI	RogueWave	tool.h++	7.0.1	C++ development library	andes
SGI	MIT	kerberos	4, 5	secure client server data transfer	andes
SGI	University of Delaware	xntpd	3.3c (Sun) 1.2, 2.2.1 (HP)	Network Time Protocol (ntp) daemon	andes
SGI	University of Tenn, ORNL	pvm	3.37	parallel virtual machinge system	andes
SGI	public domain	xpm	3.4F	X pixmap library	andes (used with sage)
SGI		mvp	3.0	Multimission VICAR Planner, AI planner	andes
SGI		spice	Current MIPS delivery version	NAIF toolkit for GLL	andes
SGI		pds_label_lib	4.0	planetary data system label library for read/write/process PDS labels	andes
SGI		pds_lablib3	1.0	PDS Label Library Light	andes
SGI		aesop	2.2	Extensible Motif-based on board-algorithm evaluation system	andes
SGI		DD++	1.2	C++ wrapper for the Motif 1.2 drag and drop preregister protocol.	Andes
SGI		MotifApp	1.9 & below	Doug Young's C++/Motif user interface class, modified by MIPS.	Andes

Intel

Platform	Vendor	Product	Version	Description	Used On:
Intel	Red Hat	Linux	6.1	Operating system	klamath
Intel	Century Computing + GSFC	TAE	5.3	Transportable Application Environment	klamath

Platform	Vendor	Product	Version	Description	Used On:
Intel	GNU project	perl	5.005.03	scripting language	klamath
Intel	Cornell University	tcsh	6.08.00	Default shell	klamath
Intel	GNU project	emacs	20.3	extensible window editor	klamath
Intel	RogueWave	tool.h++	7.0.1	C++ development library	klamath
Intel	MIT	kerberos	4, 5	secure client server data transfer	klamath
Intel	University of Delaware	xntp3	5.9.3	Network Time Protocol (ntp) daemon	klamath
Intel	public domain	xpm	3.4J	X pixmap library	klamath (used with sage)
Intel		spice	Current MIPS delivery version	NAIF toolkit for GLL	klamath
Intel		pds_label_lib	4.0	planetary data system label library for read/write/process PDS labels	klamath
Intel		pds_lablib3	1.0	PDS Label Library Light	klamath
Intel		aesop	2.2	Extensible Motif-based on board-algorithm evaluation system	klamath
Intel		DD++	1.2	C++ wrapper for the Motif 1.2 drag and drop preregister protocol.	klamath
Intel		MotifApp	1.9 & below	Doug Young's C++/Motif user interface class, modified by MIPS.	klamath
Intel	OSF	Motif	2.0.1	Windowing environment	klamath
Intel	Sybase	Sybase client	11.0.3	Sybase client for fei	klamath
Intel	Public domain	ssh	1.2.27	Secure Socket Handler	klamath
Intel	Sun	JDK	1.2	Java Developers Kit	klamath
Intel	Washington Univ., S,t. Louis, MO	ACE	5.0.14	Adaptive Communication Env.	klamath
Intel	Washington Univ. St. Louis, MO	TAO	1.0.14	The Ace Orb	klamath

SECTION 4

DELIVERY 25.0

4.1 OPERATIONS PERIOD - February 2001 through July 2001

MIPL will be supporting the following mission phases during this operations period:

- Cassini Outer Cruise
- Galileo Extended Mission
- Mars '01 ATLO, Launch and Cruise
- SIRTF ATLO
- DS1
- ST3 ATLO

4.2 NEWLY DEVELOPED CAPABILITIES:

4.2.1 General

1. For Delivery 25.0, VICAR will be supported on the following platforms:

    - Linux (Red Hat - Intel)
    - Solaris 2.7
    - IRIX 6.5.5
    - DEC Unix (FEI clients only)
    - Open VMS (selected Galileo processing only)

4.2.2 System Build

This delivery marks the move from the Solaris 2.6 to 2.7 Operating System (OS).

4.2.3 Cassini

This delivery will support the Science Cruise phase. It will include updates from the Jupiter encounter operations.

4.2.4 Galileo

This delivery continues support of the Galileo Extended Mission. The current extension is until July, 2001.

4.2.5 Mars '01

The delivery to support Mars '01 includes the following:

1. a fully functional catalog
2. MICA (Interactive Tiepointing Tool)
3. Updates from ATLO for telemetry processing, mosaic, stereo, range maps, disparity maps, mapping software, and terrain models.

Delivery includes the following programs: m01telemproc, m01point, marscahv, marscorr, marsxyz, marstie, terrain model generator, JEDI, marsmap, marsmcauley, correlator CIP, rover locator generator, MICA, marsmos, marsrad.

4.2.6 SIM

Support SIM development as required.

4.2.7 SIRTF

This delivery will include the instrument constructor integrated with the CORBA real-time subsystem. ATLO support will continue.

4.2.8 DS1

The CORBA real-time system will be integrated with the DS1 instrument constructor. DS1 will continue with "lights-dim" support.

4.2.9 ST3

Provide ST3 ATLO support.

SECTION 5

DELIVERY 26.0

5.1 OPERATIONS PERIOD - July 2001 through February 2002

MIPL will be supporting the following mission phases during this operations period:

- Cassini Outer Cruise Operations
- Mars '01 Orbiter Cruise and '01 Lander Arrival Operations
- Mars '03 Development
- SIM Development
- SIRTF Flight Operations
- DS1 Comet Encounter/Fly-by in September, '01
- ST3 Launch and Flight Operations

5.2 NEWLY DEVELOPED CAPABILITIES:

5.2.1 General

1. For Delivery 26.0, VICAR will be supported on the following platforms:

    - Linux (Red Hat - Intel)
    - Solaris 2.7
    - IRIX 6.5.5
    - Windows NT (FEI clients only)
    - DEC Unix (FEI clients only)

5.2.2 System Build

Currently, no changes are planned.

5.2.3 Cassini

Development continues with upgrades to the infrastructure to support systematic processing. There will be full support for telemetry processing. A phased capability to support Science Cruise instrument planning and commanding will be delivered.

5.2.4 Mars '01

Mars '01 real-time telemetry processing will support EDR generation. Educational outreach support will be delivered.

5.2.5 Mars '03

Development continues to support ATLO capability.

5.2.6 SIM

SIM development continues.

5.2.7 SIRTF

SIRTF support will continue with AR fixes, as required.

5.2.8 DS1

DS1 will continue with "lights-dim" support. This delivery will support a comet flyby in September, 2001, with End-of-Mission expected in December, 2001.

5.2.9 ST3

ST3 real-time telemetry processing is complete. Delivery of AR fixes.

SECTION 6

DELIVERY 27.0

6.1 OPERATIONS PERIOD - February 2002 through July 2002

MIPL will be supporting the following mission phases during this operations period:

- Cassini Outer Cruise Operations
- Mars '01 Orbiter and Landed Operations
- Mars '03 Development
- SIM Development
- SIRTF Flight Operations
- ST3 Flight Operations

Changes as a result of IOC will be delivered for SIRTF.

SECTION 7

DELIVERY 28.0

7.1 OPERATIONS PERIOD- July 2002 through February 20003

MIPL will be supporting the following mission phases during this operations period:

- Cassini Science Cruise
- Mars '01 Orbiter and Landed Operations
- Mars '03 ATLO
- SIM Development
- SIRTF Flight Operations
- ST3 Flight Operations